

CLAIM AMENDMENTS

IN THE CLAIMS

This listing of the claims will replace all prior versions, and listing, of claims in the application or previous response to office action:

1. (Currently Amended) A method of controlling an internal combustion engine that drives a reciprocating gas compressor having multiple cylinders, comprising:

receiving compressor operating values, the compressor operating values being at least values representing the load for each cylinder, the compressor suction pressure, and the compressor discharge pressure; and

calculating engine control values, based on the compressor operating values;

wherein the calculating step is performed using an algorithm that receives input to determine whether the loads among the cylinders are balanced, and if not, compensates the engine control value for unevenly distributed cylinder loads.

2. – 16. Cancelled.

17. (Previously Presented) The method of Claim 1, wherein the engine has pilot injectors, and wherein the engine control values control the pilot injectors.

18. (Previously Presented) The method of Claim 17, wherein the pilot injector control values are determined per cylinder.

19. (Previously Presented) The method of Claim 1, further comprising the step of receiving at least one engine operating value, and wherein the calculating step is further based on the engine operating value.

20. (Original) The method of Claim 19, wherein the engine operating value is from the group of: engine speed, intake manifold air pressure, intake manifold air temperature, engine temperature, exhaust back pressure, pre-turbine pressure, exhaust gas composition, air flow, fuel flow, and ignition system energy.

21. (Original) The method of Claim 1, further comprising the steps of calculating compressor control parameters, the compressor control parameters representing at least compressor load steps.

22. – 25. Cancelled.

26. (Previously Presented) The method of Claim 1, further comprising the step of communicating engine control values over a network.

27. Cancelled.

28. Cancelled.

29. (Original) The method of Claim 1, wherein the calculating step provides steady state engine control.

30. (Original) The method of Claim 1, wherein the calculating step provides transient compensation of engine control parameters.

31. **(Currently Amended)** A method of controlling an internal combustion engine that drives a reciprocating gas compressor having multiple cylinders, comprising:

receiving compressor operating values, the compressor operating values being at least values representing the load for each cylinder, the compressor suction pressure, and the compressor discharge pressure;

receiving at least one engine operating value from the group of: engine speed, intake manifold air pressure, intake manifold air temperature, engine temperature, exhaust back pressure, pre-turbine pressure, exhaust gas composition, air flow, fuel flow, and ignition system energy; and

calculating engine control values, based on the compressor operating values;

wherein the calculating step is performed using an algorithm that receives input to determine whether the loads among the cylinders are balanced, and if not, compensates the engine control value for unevenly distributed cylinder loads.

32. **(Currently Amended)** A controller for controlling an internal combustion engine that drives a reciprocating gas compressor having multiple cylinders, comprising:

circuitry for receiving compressor operating values, the compressor operating values being at least values representing the load for each cylinder, the compressor suction pressure, and the compressor discharge pressure; and

circuitry for calculating engine control value, based on the compressor operating values;

wherein the calculating step is performed using an algorithm that receives input to determine whether the loads among the cylinders are balanced, and if not, compensates the engine control value for unevenly distributed cylinder loads.

33. **(Original)** The method of Claim 1, wherein the engine control values are engine spark timing values.

34. (Original) The method of Claim 33, wherein the engine spark timing is determined per cycle.

35. (Original) The method of Claim 33, wherein the engine spark timing is determined per cylinder.

36. (Original) The method of Claim 1, wherein the engine control values are fuel quantity values.

37. (Original) The method of Claim 1, wherein the engine control values are fuel injection timing or spark timing values.

38. (Original) The method of Claim 37, wherein the timing values are determined per cycle.

39. (Original) The method of Claim 37, wherein the timing values are determined per cylinder.

40. (Original) The method of Claim 1, wherein the engine control values are pre-chamber fueling quantity values.

41. (Original) The method of Claim 40, wherein the pre-chamber fueling quantity is determined per cylinder.

42. (Original) The method of Claim 1, wherein the engine control values are pre-chamber fuel pressure values.

43. (Original) The method of Claim 42, wherein the pre-chamber fuel pressure is determined per cylinder.

44. (Original) The method of Claim 1, wherein the engine control values are air-to-fuel ratio values.

45. (Original) The method of Claim 44, wherein the air-to-fuel ratio is determined per cylinder.

46. (Original) The method of Claim 1, wherein the engine has a turbocharger, and wherein the engine control values are turbocharger control values.

47. (Original) The method of Claim 31, further comprising the steps of calculating compressor pocket positions, based on the engine operating values.

48. (Original) The method of Claim 31, further comprising the steps of calculating compressor load step sequences, based on the engine operating values.

49. (Original) The method of Claim 31, further comprising the steps of calculating compressor suction conditions, based on the engine operating values.

50. (Original) The method of Claim 31, further comprising the steps of calculating compressor discharge conditions, based on the engine operating values.

51. (Original) The method of Claim 1, wherein the calculating step is further based on input data representing engine efficiency.

52. (Original) The method of Claim 1, wherein the calculating step is further based on input data representing engine emissions.

53. (Original) The method of Claim 1, wherein the engine control values are air flow quantity values.